2017 Spring Electrofishing (SEII) Summary Report

Long Lake (WBIC 321300)

Shawano County

Introduction and Survey Objectives

In 2017, the Department of Natural Resources conducted a one night electrofishing survey of Long Lake in order to provide insight and direction for the future fisheries management of this water body. This survey was intended to evaluate the Fish Sticks project that was completed in 2016. Primary sampling objectives of this survey were to characterize species composition, relative abundance, and size structure. The following report is a brief summary of that survey, the general status of the fish populations and future management options for Long Lake.

Acres: 87
Lake Type: Spring
Regulations: Statewide Default Regulations

Shoreline Miles: 2.0
Public Access: No public access

Maximum Depth (feet): 35

Survey Information							
Site location	Survey Date	Water Temperature (°F)	Target Species	Total Miles Shocked	Number of Stations	Gear	Number of Netters
Long Lake	5/25/2017	62	All	1.93	4	Boomshocker	2

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Survey Method

- Long Lake was sampled according to spring electrofishing (SEII) protocols as outlined in the statewide lake assessment plan. The primary objective for this sampling period was to count and measure adult bass and panfish. Other gamefish may be sampled but are considered by-catch as part of this survey.
- The entire shoreline was sampled with a boomshocker. All fish captured were identified to species and gamefish and panfish were measured for length. A subsample of fish had age structures collected for age and growth analysis.
- Fish metrics used to describe fish populations include proportional stock density, catch per unit effort, length frequency distribution, and mean age at length.

Fish Metric Descriptions
PSD, CPUE, LFD, and Growth

Proportional Stock Density (PSD) is an index used to describe size structure of fish populations. It is calculated by dividing the number of quality size fish by the number of stock size fish for a given species. PSD values between 40 - 60 generally describe a balanced fish population.

Catch per unit effort (CPUE) is an index used to measure fish population relative abundance which simply refers to the number of fish captured per unit of distance or time. For electrofishing surveys, we typically quantify CPUE by the number and size of fish per mile of shoreline. CPUE indexes are compared to statewide data by percentiles. For example, if a CPUE is in the 90th percentile, it is higher than 90% of the other CPUEs in the state.

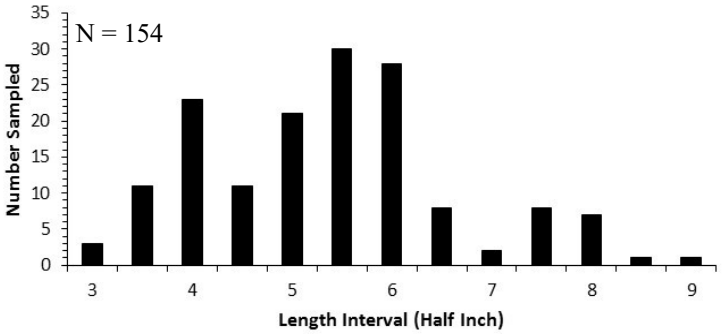
Length frequency distribution (LFD) is a graphical representation of the number or percentage of fish captured by half inch or one inch size intervals. Smaller fish (or younger age classes) may not always be represented in the length frequency due to different habitat usage or sampling gear limitations.

Mean Age at Length is an index used to assess fish growth. Calcified structures (e.g., otoliths, spines, or scales) are collected from a specified length bin of interest (e.g., 7.0-7.5 inches for bluegill). Mean age is compared to statewide data by percentile with growth characterized by the following benchmarks: slow (<33rd percentile); moderate (33rd to 66th percentile); and fast (>66th percentile).

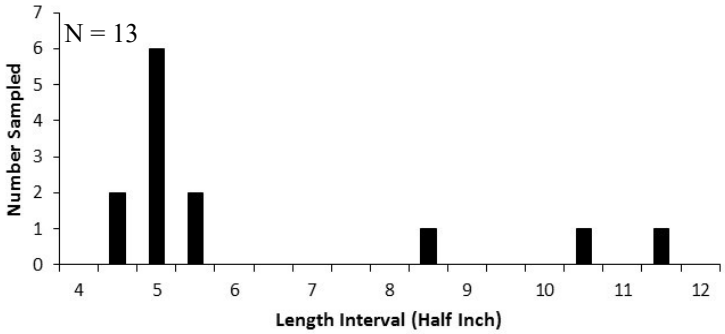
Size Structure Metrics									
Species	Total	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock Number	Quality Number	PSD	Percentile Rank	Size Rating
BLUEGILL	154	5.6	3.2 - 9.1	3.0 and 6.0	154	55	36	62	Moderate
BLACK CRAPPIE	13	6.4	4.8 - 11.5	5.0 and 8.0	11	3	27	44	Moderate
LARGEMOUTH BASS	155	10.5	3.6 - 19.5	8.0 and 12.0	120	47	39	29	Low
YELLOW PERCH	15	4.5	3.8 - 6.9	5.0 and 8.0	2	0	0	0	Low

Abundance Metrics							
Species	CPUE Total (number per mile)	Percentile Rank	Overall Abundance Rating	Length Index	Length Index CPUE	Length Index Percentile Rank	Length Index Abundance Rating
BLUEGILL	154	70	High	≥ 7.0 inches	19.0	77	High
BLACK CRAPPIE	13	68	Moderate - High	≥ 8.0 inches	3.0	53	Moderate
LARGEMOUTH BASS	80.3	94	High	≥ 14.0 inches	18.7	96	Very High
YELLOW PERCH	15	63	Moderate	≥ 8.0 inches	0.0	0	Low

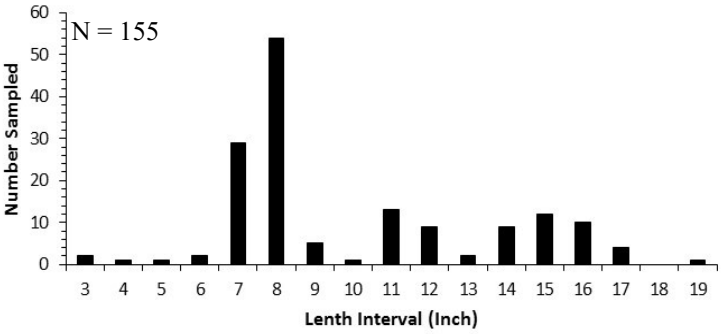
Bluegill Length Frequency



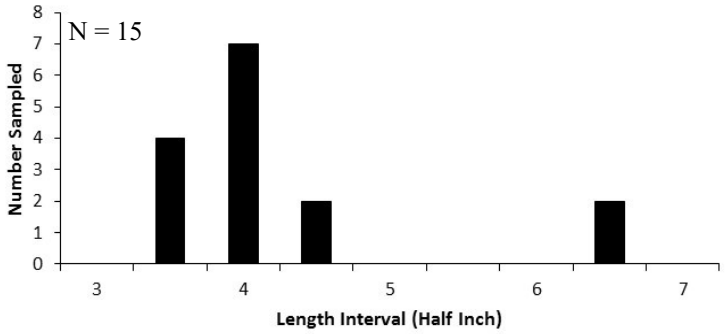
Black Crappie Length Frequency



Largemouth Bass Length Frequency



Yellow Perch Length Frequency



Summary

- A total of 382 fish from nine species were collected during our survey. The most frequently encountered and common species were largemouth bass (155), bluegill (154), and white sucker (30).
- Other species sampled in lower abundance include yellow perch (15), black crappie (13), common carp (9), gizzard shad (4), northern pike (1), and brook silverside (1).
- Common carp, an invasive species, were observed during electrofishing.
- Largemouth bass were the dominant gamefish captured during our survey. Largemouth bass abundance was found at high levels. Thirty six individuals >14 inches were also captured indicating a high density of larger individuals as well. A strong year class between 7 - 9 inches is bringing the PSD down, but should provide a quality fishery when they grow to sizes more desired by anglers.
- A large number of gizzard shad were observed during electrofishing. Gizzard shad can provide an additional food source on top of panfish for predatory gamefish such as largemouth bass and northern pike.
- Only one northern pike was captured during electrofishing. However, fyke netting would be a more appropriate sampling technique to assess the northern pike population.
- Panfish populations were comprised mainly of bluegill with some black crappie and yellow perch. Bluegill were found at high densities and moderate to high size structure. 36% of bluegill captured were >6 inches and 12% were greater >7 inches indicating plenty of harvestable size bluegill were found in the population. Bluegill growth rates in Long Lake were some of the fastest observed in the state. Many bluegills between 4 - 6 inches were captured. Given their fast growth, these individuals should be a harvestable size in the next year or two.
- A strong year class of small black crappies (i.e., 4 - 6 inches) and yellow perch (i.e., 3 - 5 inches) should grow to harvestable size in the next couple of years, especially if they grow as fast as bluegill.

Growth Metrics

Species	Total (N)	Length Bin (inches)	Mean Age (years)	Age Range (years)	Percentile Rank	Growth Rating
BLUEGILL	8	5.5 - 6.4	3	3	100th	Fast
BLUEGILL	8	6.5 - 7.4	3.38	3 - 4	91st	Fast

Management Options

This survey was primarily intended to assess largemouth bass and panfish populations. Other species are captured but different survey techniques are typically used to better assess their population metrics. Therefore, management recommendations are focused on bass and panfish.

Largemouth Bass

- Largemouth bass were found at optimal levels. Overall density as well as the density of legal size (i.e., >14") largemouth bass were both high compared to other lakes throughout Wisconsin. Abundant panfiish, gizzard shad, and sucker populations allow largemouth bass to grow to large sizes while still maintaining such high densities. No management action recommended at this time.

Panfish

- Bluegill were found at optimal levels. Plenty of harvestable size fish can be found in the population as well as an abundance of fish that should grow to be harvestable size in the next year or two, especially given their fast growth. It is likely that the high productivity of Long Lake supports the fast growth rates observed in bluegill. Predator densities should be maintained at current levels to prevent bluegills from becoming overpopulated in the future.

Other Management Objectives

- The Fish Sticks project completed in 2016 provides additional near shore habitat for all fish species found in Long Lake.